ROLES OF TECHNOLOGY IN ACTOR ENGAGEMENT

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ABSTRACT

Recent research reveals technology playing an increasingly important and versatile role in customer and actor engagement (AE), but focused analysis on these roles is lacking. This paper examines five key roles that technology can play in AE, Technology as: 1) focal engagement object; 2) engagement platform, 3) initiator of engagement, 4) shaper of engagement institutional context; and 5) focal engaging actor. This paper enriches literature on AE by introducing postphenomenology and technological environmentality and serves as the first attempt to systematically analyse and organize this phenomenon.

INTRODUCTION

A growing body of research addresses the importance of technology in service ecosystems (Akaka and Vargo, 2014; Breidbach and Maglio, 2016; Lusch and Nambisan, 2015). Within this domain, technology is viewed as an operant resource enabling actor-to-actor interactions and relationships; or in autonomous interactions. These roles challenge conventional views of technology as an operand resource and emphasize the materiality of devices.

The context of engagement focusses this debate within a rapidly growing area of service research. Engagement refers to dynamic and iterative processes that reflect actors' dispositions to invest resources in interactions with other actors in a service system (Brodie et al., 2019). Engagement research has expanded from brand-customer relationships (e.g., Brodie et al., 2011) to reflect the social and collective nature of engagement in networks (e.g., Alexander et al., 2018; Chandler and Lusch, 2015) and multiple actors (e.g., Jaakkola and Aarikka-Stenroos, 2019; Kumar and Pansari, 2015) - researchers even propose machines as engaging actors (Storbacka et al., 2016).

However, while the importance of socio-technical resources in value co-creation is understood (Breidbach and Maglio, 2016), understanding of the relationship between technology and actor engagement (AE) remains underdeveloped. In this paper we draw on broader philosophies and frameworks of technology, such as postphenomenology (PP) and technological environmentality (TE) to *conceptualize the key roles that*

technology may play in AE. This endeavour has significant potential given emerging technologies, modes of interaction and autonomous communication and decision making. All these suggest an urgent need to understanding how technologies shape human decision-making, experiences, behaviour, and agency (Aydin et al., 2018). This paper answers the calls "to illuminate the roles of technology in a systemic value co-creation, to understand the role of autonomous devices, and to employ postphenomenological research" (Kaartemo and Helkkula, 2018, p. 219).

THEORETICAL BACKGROUND

Actor engagement in service ecosystems

AE reflects actors' dispositions to invest resources in interactions with other actors beyond what is elementary to any transactional exchange in the customer-seller setting for example (Alexander et al., 2018; Brodie et al., 2019). Three properties are central to AE (i) the observable activity of engaging (engagement behavior), (ii) emotional and/or cognitive readiness to engage (engagement disposition); and (iii) the extent to which network relationships influence actors in the network (engagement connectedness)(Brodie et al., 2019).

AE is manifest in behaviours through which actors contribute resources to other actors in the service system (Jaakkola and Alexander, 2014) and facilitated by platforms that connect actors to each other (Breidbach et al., 2015). The properties of AE often emerge from actor-specific proclivities, however characteristics of the institutional context also determine why, when and how actors engage in resource integration activities. For example, social norms and reference groups in engagement contexts contribute to the emergence and valence of AE (Alexander et al., 2018).

Although research predominantly views humans as focal engaging actors, Storbacka et al. (2016, p. 3015) define actor disposition more broadly as "a capacity of an actor to appropriate, reproduce, or potentially innovate upon connections in the current time and place, in response to a specific past and/or toward a specific future", arguing that machines may have dispositions, too. This more nuanced view of actors identifies two potential research themes relevant to novel actor combinations and perception of machines/technologies as actors (Storbacka et al., 2016): firstly, ubiquitous autonomous technology has the potential to change the volume and variety of actors available for engagement, as well as the number of connections between actors that engagement can build on; secondly, engagement by, or with technology will differ from engagement by, or with people, suggesting that research ought to focus on how technologies might function as actors.

In sum, current research portrays technology as an operand or operant resource, as an actor, and with the emergence of ubiquitous technology, as something contextual. This conceptual controversy encourages us to consider how emerging technologies influence our understanding of the roles of technology in AE.

Postphenomenology

Postphenomenology (PP) (Ihde, 2004; Rosenberger and Verbeek, 2015; Verbeek, 2005) is an approach in the philosophy of technology which considers its role in relations between the human beings and the world. Importantly, technologies are not only seen as being a part of our world but mediating human relations with the world. These mediations shape the perceptions of human capacity and organize social practices (Aydin et al., 2018). PP focuses on a relational ontology where people and technology are inseparable. A duality is offer where just as humans shape things, technology transforms the way we experience and make sense of the world. As a result, agency does not only reside in a human being but is mediated by technology. Verbeek (2008) refers to this as cyborg intentionality which has three variations:

- Mediated intentionality: is used to express the simple fact that most of the relations we have with the world around us are either mediated by or directed at technological devices and artefacts e.g. wearing glasses to read a book
- Hybrid intentionality: refers to the merging of human with technology into a new entity. These human–technology relations are usually associated with “bionic” beings, or cyborgs, being half organic, half technological but includes, for example, use of implants to enhance visual impairment.
- Composite intentionality: is an ‘interplay’ between human intentionality and the intentionality of technological artefacts. Here technology constructs reality for human beings. For instance, radio telescopes produce a visible image of a star not visible human eye.

Technological environmentality

Technological environmentality (TE) emphasizes that technological environments are actively involved with human beings and material objects for whom and with which they exist in mutual interdependency (Aydin et al., 2018). TE introduces the idea of a *double dimension of agency*. First, the interaction between humans and their material environment, where human and nonhuman agency shape each other. Second, the interaction between human and the material environment

shapes human beings and the material beyond the immediate interaction (Aydin et al., 2018).

Aydin et al. (2018) claim that the double dimension of agency is evident in today's active technological environments, such as smart elderly houses restricting the movement of people with Alzheimer's disease. While there is interaction between the patients and the house, the interaction also mediates how patients interact with each other and other technology. As a result, technology can mediate intentional relations through both interaction and from an environmental role. While the latter could easily be considered as being simply background technologies or contextual, Aydin et al. (2018) propose a difference between contextual background technologies and interactive immersion technologies that characterize smart environments.

Instead of being 'a means'—a technology that is actively used by human beings—to connect humans and the world, immersion technologies become a 'milieu' that mediate that connection while being part of the world. Importantly, milieu is not actively used by human beings but it forms the interactive environment connecting humans and world. While technology becomes invisible, it is intentionally directed at humans to shape how humans act, perceive, and live their lives (Aydin et al., 2018). TE perceives that experiences of the world are mediated by technology and, on that basis, the technological environment conditions human behaviour. Similarly, actor engagement can be perceived as being mediated and conditioned by technological environment.

FINDINGS: FIVE KEY ROLES TECHNOLOGY PLAYS IN AE

Drawing from literature on AE, PP and TE we identify five key roles that technology can play in AE: Technology as 1) focal engagement object; 2) engagement platform, 3) initiator of engagement, 4) shaper of institutional context for engagement; and 5) focal engaging actor. We conceptualize these roles vis-à-vis engagement properties and what is the view on technology as a resource.

1. Technology as focal engagement object

The most rudimentary role is when technology is embodied in a product that acts as the focal engagement object, reflecting traditional customer engagement as consumer's connection with a product or brand (e.g., Brodie et al., 2011). Here engagement is centred on some unique feature or characteristic of technology that give rise to an actor's heightened emotional and cognitive disposition, leading to increased resources investments towards the product or brand. For example, in products such

as Apple Watch or Oura ring technology is one key factor in contributing to the uniqueness of the brand that actors become fans of.

2. Technology as engagement platform

Engagement platforms (see Breidbach et al., 2014, 2015) have recently emerged within the wider service research literature as a central concept to operationalize actor engagement within ICT-mediated environments. (Storbacka et al., 2016, p. 3015) view engagement platform as “a multi-sided intermediary that actors leverage to engage with other actors to integrate resources”. Likewise, Breidbach and Brodie (2017) visualize engagement platform as a meso-level (triadic) meeting point for service providers and customers to exchange money for offerings in the micro level. By providing structural support for the exchange and integration of resources, engagement platforms facilitate value co-creation.

Storbacka et al. (2016) build on Latour's (2005) distinction between intermediaries and mediators. While intermediaries facilitate the force of some other actor (more or less) without transformation, mediators modify other actors and resources. This difference is crucial when exploring and categorizing the roles of engagement platforms in service ecosystems. For instance, Skype is a platform that brings together human actors and their resources. But when Skype is upgraded to Skype Translator, offering real-time translation, then this technology starts to modify (in this case by translating) resources that are being integrated during the engagement (Storbacka et al., 2016). Recent literature can support both of these views with engagement platforms viewed both as intermediaries and mediators (Breidbach et al., 2015; Storbacka et al., 2016).

3. Technology as initiator of engagement

The third role sees technology initiating engagement. Here we begin to perceive information technology as both operand and operant resource (Lusch and Nambisan, 2015). The role of technology as an operant resource underscores how the increasing extent of digital resources (components) and digitalization creates new opportunities for resource integration. As operant resource, technology becomes an active agent in the ecosystem that has the capacity to independently trigger, or initiate, service exchange, impacting other actors and their choices (Lusch and Nambisan, 2015). For example, digital components of a service platform may seek out and pursue unique resource integration opportunities on their own, and in the process, engage with (or act upon) other actors (both animate and inanimate) in the network in value cocreation.

4. Technology as shaper of institutional context for engagement

The fourth role of technology in AE is to shape the institutional context where engagement occurs. We draw on Orlikowski's (1992) structurational model of technology that offers a duality; technology as both a product of, and input for, human action. As Akaka and Vargo (2014) note, technology can be seen as an operant resource because it influences institutions, which subsequently influence human actions. In many engagement platforms, such as social media, algorithms affect actors by influencing their perceptions, preferences, and values, and ultimately behavior, through selecting the stimuli and information each stakeholder is subjected to. By affecting these stakeholders, technology gradually affects the institutional context of AE as it is (re)formed through ecosystem actors' behavior.

5. Technology as focal engaging actor

In our fifth category we consider the role of technology as an engaged actor. As noted above, there is a growing view that machines can be considered as some type of engaged actors in engagement (Breidbach and Brodie, 2017; Storbacka et al., 2016). For instance, autonomous vehicles can in the future decide where to go for a car service based on its previous experiences and the analysis of experiences of other things (cars and parts of). This kind of technology is conceptualized as shopping bot 3.0 by Kaartemo and Helkkula (2018). But the extent to which machines may have their own disposition to engage is still disputed. Although this role may not be fully reality today, it may be within the very near future. Consider the film *ex machina* or TV series *Westworld* that explore what might happen when advanced machine learning allows technology to achieve some form of sentience and, as a result, agency. These may seem like distant possibilities but advances in autonomous technologies transform actor-to-actor interaction in the here and now, for instance, by substituting human-based interaction with technology-to-technology interaction (e.g., an automobile that autonomously alerts emergency services). Recent empirical work, for example, explores the role of AI in service provision where robots interact on a social level using facial and voice recognition to increase social engagement with humans (Čaić et al., 2018).

Technological environmentality has the potential to advance our understanding of the actor's disposition to engage. If an actor's disposition is related to a capacity to appropriate, reproduce, or potentially innovate upon connections in the current time and place, in response to a specific past and/or toward a specific future, then the potential for machines to have dispositions is realised (Davenport, 2013). TE claims

that disposition does not have to reside in machines alone but in human-technology relations. The sophistication of AI-enabled smart environments entails that networked AI devices not only operate at the background of our attention, without any human intervention, but also become active in new ways. For example, the repeated programming and engagement that technologies may once have required could now be achieved through the adaptive managerial skills of an AI home assistant.

With regard to intentionality, Storbacka et al. (2016) assert that technologies do not have intentions and or agency in and of themselves. This problematization follows traditional discussions linking agency with human intentionality. However, we propose that agency might not only refer to intentionality before action but is constituted and emerges from the artificial alliance of human and technology. In fact, we argue that there might not be any human or nonhuman agencies in isolation. Instead, ‘cyborg intentionality’ (Verbeek, 2008) exists where human intentionality is always partly constituted by technology.

CONCLUSION

Beyond pioneering work of Storbacka et al. (2016), research on technology in AE is still in its infancy. We contribute by reviewing different roles of technology in actor engagement (see Table 1). This analysis is the first attempt to systematically analyse and organize this phenomenon within AE research. The paper demonstrates understanding the role of technology in AE depends both on ontological premises but also the way we assign agency to technology. This paper contributes to service research by showing, through conceptual analysis, how technological environmentality, as an alternative framework of technology, can be employed to extend our understanding of how technology shapes actor engagement in service relationships both now and in the future.

Table 1: Role of Technology in AE

Role of technology in AE	Conceptualization Examples	View on technology
1. Technology as focal engagement object	AE triggered by unique characteristics of technology. **Examples**: Apple Watch, Oura Ring	Operand resource and object
2. Technology as engagement platform	Technology facilitates the emergence and spread of AE in a network. **Examples**: Mumsnet, TripAdvisor, Yelp	Operand resource and intermediary
3. Technology as initiator of engagement	Technology triggers the emergence and spread of AE in a network. **Examples**: Social media recommendations or location-based advertising	Operant resource and mediator
4. Technology as shaper of institutional context for engagement	Technology shapes AE by manipulating resources and institutional arrangements affecting AE. **Examples**: Algorithms, AI affecting what content is seen on social media.	Operant resource and framer
5. Technology as focal engaging actor	Technology displays cognitive and/or emotional disposition to invest resources towards an engagement object. **Examples**: Shopping bot 3.0 and robots with advanced emotional intelligence (not existent yet)	Operant resource and subject

This focus on roles of technology in AE is needed as understanding, to date, is built on sociological framings with human actors at the center and nonhuman capacities and affordances peripheral. Materiality has, largely, been presented as something humans deal with through their own interpretative frames and agency (Pinch, 2008). But, the view of agency being privileged to humans is also proposed as indefensible (cf. Vargo, 2018). TE enables us to see that agency does not only reside in human actors but in human-technology relations. The set of roles identified in this study is the first step towards a better conceptual understanding on technology in the realm of AE and the implications it may pose for future research and practice.

REFERENCES

Akaka, M.A. and Vargo, S.L. (2014), "Technology as an operant resource in service (eco)systems", *Information Systems and E-Business Management*, Vol. 12 No. 3, pp. 367–384.

Alexander, M.J., Jaakkola, E. and Hollebeek, L.D. (2018), "Zooming out: actor engagement beyond the dyadic", *Journal of Service Management*, Vol. 29 No. 3, pp. 333–351.

Aydin, C., Woge, M.G. and Verbeek, P.-P. (2018), "Technological Environmentality : Conceptualizing Technology as a Mediating Milieu", *Philosophy & Technology*, Philosophy & Technology.

Breidbach, C.F., Brodie, R. and Hollebeek, L. (2014), "Beyond virtuality: From engagement platforms to engagement ecosystems", *Managing Service Quality*, Vol. 24 No. 6, pp. 592–611.

Breidbach, C.F. and Brodie, R.J. (2017), "Engagement platforms in the sharing economy: Conceptual foundations and research directions", *Journal of Service Theory and Practice*, Vol. 27 No. 4, pp. 761–777.

Breidbach, C.F., Chandler, J.D. and Maglio, P.P. (2015), "The duality of second screens: A phenomenological study of multi-platform engagement and service experiences", *Proceedings of the Annual Hawaii International Conference on System Sciences*, Vol. 2015–March No. September 2016, pp. 1432–1441.

Breidbach, C.F. and Maglio, P.P. (2016), "Technology-enabled value co-creation: An empirical analysis of actors, resources, and practices", *Industrial Marketing Management*, Elsevier Inc., Vol. 56, pp. 73–85.

Brodie, R.J., Fehrer, J.A., Jaakkola, E. and Conduit, J. (2019), "Actor Engagement in Networks: Defining the Conceptual Domain", *Journal of Service Research*, p. 109467051982738.

Brodie, R.J., Hollebeek, L.D., Juric, B. and Ilic, A. (2011), "Customer Engagement: Conceptual Domain, Fundamental Propositions, and Implications for Research", *Journal of Service Research*, Vol. 14 No. 3, pp. 252–271.

Čaić, M., Odekerken-Schröder, G. and Mahr, D. (2018), "Service robots:

value co-creation and co-destruction in elderly care networks", *Journal of Service Management*, Vol. 29 No. 2, pp. 178–205.
Chandler, J.D. and Lusch, R.F. (2015), "Service Systems A Broadened Framework and Research Agenda on Value Propositions, Engagement, and Service Experience", *Journal of Service Research*, Vol. 18 No. 1, pp. 6–22.
Davenport, T. (2013), "Analytics 3.0", *Harvard Business Review*, Vol. 91 No. 12, pp. 64–72.
Ihde, D. (2004), "Philosophy of Technology", *Philosophical Problems Today*, pp. 91–108.
Jaakkola, E. and Aarikka-Stenroos, L. (2019), "Customer referencing as business actor engagement behavior – Creating value in and beyond triadic settings", *Industrial Marketing Management*, Elsevier, Vol. In Press, available at:https://doi.org/10.1016/j.indmarman.2018.06.014.
Jaakkola, E. and Alexander, M. (2014), "The Role of Customer Engagement Behavior in Value Co-Creation: A Service System Perspective", *Journal of Service Research*, Vol. 17 No. 3, pp. 247–261.
Kaartemo, V. and Helkkula, A. (2018), "A systematic review of artificial intelligence and robots in value co-creation: Current status and future research avenues", *Journal of Creating Value*, No. forthcoming, available at:https://doi.org/10.1111/pce.13018.
Kumar, V. and Pansari, A. (2015), "Competitive Advantage through Engagement", *Journal of Marketing Research*, Vol. 53 No. 4, pp. 497–514.
Latour, B. (2005), *Reassembling the Social: An Introduction to Actor-Network Theory*, Oxford University Press, Oxford, UK.
Lusch, R.F. and Nambisan, S. (2015), "Service Innovation: A Service-Dominant-Logic perspective", *MIS Quarterly*, Vol. 39 No. 1, pp. 155–175.
Orlikowski, W. (1992), "The duality of technology: Rethinking the concept of technology in organizations", *Organization Science*, Vol. 3 No. 3, pp. 398–427.
Pinch, T. (2008), "Technology and institutions: Living in a material world", *Theory and Society*, Vol. 37 No. 5, pp. 461–483.
Rosenberger, R. and Verbeek, P.-P. (2015), "Introduction", in Rosenberger, R. and Verbeek, P.-P. (Eds.), *Postphenomenological Investigations: Essays on Human–Technology Relations*, Lexington Books, Lanham, MD, pp. 1–6.
Storbacka, K., Brodie, R.J., Böhmann, T., Maglio, P.P. and Nenonen, S. (2016), "Actor engagement as a microfoundation for value co-creation", *Journal of Business Research*, Elsevier Inc., Vol. 69 No. 8, pp. 3008–3017.
Vargo, S.L. (2018), "Situating Humans , Technology and Materiality in Value Cocreation", *Journal of Creating Value*, Vol. 4 No. 2, pp. 202–

204.
Vargo, S.L. and Lusch, R.F. (2004), “Evolving to a New Dominant Logic for Marketing”, *Journal of Marketing*, Vol. 68 No. 1, pp. 1–17.
Verbeek, P.-P. (2005), “What things do: Philosophical reflections on technology, agency, and design, trans”, *Robert P. Crease (University Park, PA: Pennsylvania State University Press, 2005)*.
Verbeek, P.-P. (2008), “Cyborg intentionality: Rethinking the phenomenology of human-technology relations”, *Phenomenology and the Cognitive Sciences*, Vol. 7 No. 3, pp. 387–395.